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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/807,655	04/16/2001	Dharshini Chryshantha Fongalland	JMYT-236US	2279
23122	7590	11/10/2003	EXAMINER	
RATNERPRESTIA P O BOX 980 VALLEY FORGE, PA 19482-0980			BOYD, JENNIFER A	
			ART UNIT	PAPER NUMBER
			1771	

DATE MAILED: 11/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/807,655

Applicant(s)

FONGALLAND ET AL.

Examiner

Jennifer A Boyd

Art Unit

1771

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 08 August 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 17, 18 and 23 - 34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 17, 18 and 23 - 34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Response to Amendment***

1. The Applicant's Amendments and Accompanying Remarks, filed August 8, 2003, have been entered and have been carefully considered. Claims 17 and 24 – 34 have been amended, claims 13, 14 and 19 – 22 have been cancelled and claims 17, 18 and 23 – 34 are pending. In view of Applicant's Amendments, the Examiner withdraws the rejection under 35 U.S.C. (e) as being anticipated by Denton (US 6,042,958) of claims 31 – 32 as set forth in paragraph 3 of the previous Office Action dated May 14, 2003. Despite these advances, the invention is not found be patentable for reasons herein below.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

### ***Claim Rejections - 35 USC § 102***

3. Claims 17 - 18, 23 – 27 and 33 - 34 are rejected under 35 U.S.C. (e) as being anticipated by Denton (US 6,042,958). The rejection is maintained.

Denton is directed to a composite membrane particularly useful for electrochemical devices (column 1, lines 1 – 5).

As to claims 17 and 18, Denton teaches that the membrane is made from a process based on paper-making technology. In the membrane making process, the fibers are dispersed in water to form a dilute slurry, equated to Applicant's step "a". The slurry is deposited onto moving mesh bed, equated to Applicant's step "b", which would consolidate the fibers to create Applicant's "fibre network". The "fiber network" is dried and then compacted, equated to Applicant's step "c". Afterwards, the membrane is

coated and filled with a polymeric material by means of a nip roller, equated to Applicant's step "d" and "ii". In one further embodiment, the particulate matter, i.e. silica particles, may be added to the polymeric material. The particulate matter may be first coated with an ion conducting polymer, such as a fluorinated polymer (column 6, lines 15 – 65). In this situation, the ion-conducting polymer and silica particles are dispersed into the polymeric material. Therefore, when the membrane is coated and filled with the polymeric material, it will simultaneously be filled with the ion-conducting polymer and silica particles. It should be noted that step (d) is performed after the fiber network has been formed in step (b) and before the completion of step (ii).

As to claim 23, Denton teaches a composite membrane comprising a porous substrate of randomly orientated individual fibers (Abstract).

As to claims 24, Denton teaches filling the membrane with a solution of the polymeric material (column 6, lines 24 – 27). The silica is in the size range of 0.001 - 10 micrometers (1 – 1000 nanometers), which overlaps the required size range of 1 – 100 nm for particles in a colloidal solution.

As to claims 25 and 26, Denton teaches that the fluorinated hydrocarbon polymer can be polytetrafluoroethylene (PTFE), which is a non ion-conducting polymer (column 5, lines 27 – 31).

As to claim 27, the limitations of the patent are discussed above.

As to claim 33, Denton teaches that silica and glass fibers can be used (column 3, lines 5 – 10).

As to claim 34, Denton teaches that the fibers have diameters typically in the range of 0.1 to 50 micrometers (column 3, lines 13 – 16).

*Claim Rejections - 35 USC § 103*

4. Claims 28 – 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Denton (US 6,042,958). The details of the rejection can be found in paragraph 7 of the previous Office Action dated May 14, 2003. The rejection is maintained.

5. Claims 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Denton (US 6,042,958) in view of Cisar (US 6,495,209).

Denton teaches the claimed invention except fails to teach that the binder can be in the form of a dilute aqueous dispersion as required by claim 31 and the dilute aqueous dispersion has about 10% weight solids in the aqueous solution as required by claim 32.

Cisar teaches a method of fabricating a composite membrane especially useful in electrochemical cells (column 1, lines 5 – 10). The composite membrane is created by forming a polymer solution of at least one polymer and filling the pores of a porous matrix with the solution (column 3, lines 33 – 40). In one embodiment, Cisar teaches that the polymer can be PTFE (column 4, lines 15 – 25) and the porous matrix can be made of silica (column 4, lines 35 – 30). Cisar teaches that the polymers can be blended that are fully miscible as in a solution or they may be only partially or non miscible. In the case when the polymers are not fully miscible, the polymers may be spread as a finely dispersed mixture (column 6, lines 5 – 15).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to create the binder in the form of a dilute aqueous dispersion as suggested by Cisar when creating the composite membrane of Denton motivated by the

desire to create a binder material with the desired binder components without being limited by solubility factors.

As to claim 32, Denton in view of Cisar discloses the claimed invention except the dispersion has about 10% weight of solids in the aqueous solution. It should be noted that the weight percentage of solids in the aqueous solution is a result effective variable. For example, as the amount of silica increases, the number of sites available for proton migration and/or the sites available for holding water within the substrate increases or as the amount of ion conducting polymer increases, the conductivity increases. It would have been obvious to one having ordinary skill in the art at the time the invention was made to create the porous membrane of Denton in view of Cisar such that the dispersion has about 10% weight of solids in the aqueous solution since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In the present invention, one would have been motivated to optimize the ratio of silica and polymer in order to achieve the appropriate level of sites for proton migration and conductivity.

#### ***Response to Arguments***

6. Applicant's arguments filed on August 8, 2003 have been fully considered but they are not persuasive.
7. In response to Applicant's arguments that Denton does not disclose the process of claim 17, the Examiner argues the contrary. First, the Applicant sets forth process steps but does not specify that the process steps must be in a certain order. The only limitations

set forth is that step (d) must be performed after the fiber network is formed. If step (d) is performed simultaneously with step (ii) as discussed in the rejection above, step (d) will have been performed after the fiber network has been formed and before the completion of step (ii). Please review the rejection above for details.

### ***Conclusion***

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

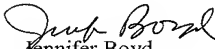
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer A Boyd whose telephone number is 703-305-7082. The examiner can normally be reached on Monday thru Friday (8:30am - 6:00pm).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on 703-308-2414. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

  
Jennifer Boyd  
October 28, 2003

  
TERREL MORRIS  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700